


KORUS-AQ

# KORUS Logistics

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- Osan AB Access
- Lodging
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# Project Registration for AFRC Visit (2015) and KORUS AQ Mission (2016)

*Request an Email  
invitation to register on  
the database.*



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### KORUS-AQ

**KORUS-AQ: An International Cooperative Air Quality Field Study in Korea**

**US Steering Group:** Jassim Al-Saadi, Gregory Carmichael, James Crawford, Louisa Emmons, and Saewung Kim

**Korean Steering Group:** Chang-Keun Song, Lim-Seok Chang, Gangwoong Lee, Jhoon Kim, and Rokjin Park

**Introduction**

Air Quality is an environmental concern of fundamental importance across the globe. The need to monitor and understand air quality requires continual effort as populations grow, energy use increases, and industrial activity evolves. Air quality goals have also evolved as improved understanding of health effects has demonstrated the added benefit of setting lower targets for exposure of humans and ecosystems to ozone, fine particles, and other toxic pollutants in the air. Long-term efforts have relied primarily on ground-based observations to diagnose regions of poor air quality and modeling to develop mitigation strategies. In recent years, satellites in low Earth orbit (LEO) have demonstrated the ability to observe the critical constituents affecting air quality. However, the impact of LEO observations has been limited by their infrequent nature and coarse resolution with respect to source distributions and timing (approximately once per day at horizontal scales of tens of km), insufficient to observe the details of air quality events that can develop over timescales of a single day. The promise of geostationary (GEO) observations as a vantage point for studying air quality can overcome these problems by providing observations many times throughout the day and at higher spatial resolution by taking advantage of longer viewing times. The drawback of GEO is the limited viewing domain, preventing global observations with a single satellite. This has led to an international effort to launch a constellation of satellite instruments focused on air quality over Asia, North America, and Europe. These instruments will provide hourly observations of those regions throughout the day at horizontal resolutions of better than 10 km. The funded GEO atmospheric chemistry instruments expected to launch in 2018-2019 include GEMS by the Republic of Korea, TEMPO by the US, and Sentinel-4 by Europe (Figure 1). Also, with its planned launch in 2016 the Sentinel-5 Precursor (S5P) mission will begin providing the next generation of once-daily global measurements from LEO at horizontal resolution similar to the GEO missions.

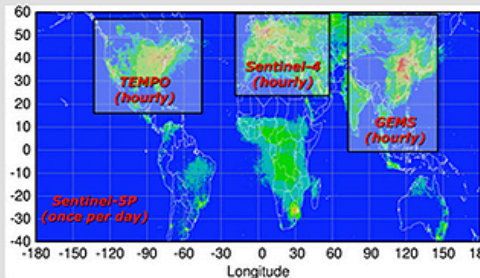


Figure 1. Global air quality satellite constellation showing expected fields of view for hourly geostationary observations from satellites positioned over North America (NASA-TEMPO), Europe (ESA-Sentinel-4), and Asia (KARI-GEMS). These observations will be supplemented by daily global views from TROPOMI onboard ESA's LEO satellite, Sentinel-5P. The background image is the global distribution of NO<sub>2</sub> as seen from space.

See the [Science Overview](#) page for mission related documentation.

View or download the [Osan Air Base Traveler Information Package](#) (3rd UPDATE - June 25th, 2015)

g/user/espodb

<https://espo.nasa.gov/home/korus-aq/user/722/espodb>

# Project Registration

- **Contact Information**
  - Phone number, address, email address, passport style picture...
- **Travel Intentions**
  - Dates of Work at Osan Air Base
  - Indicate if lodging is required
- **Personal Information**
  - Date of birth, Korean ID, passport information, scanned picture of KID and passport.

# Project Registration

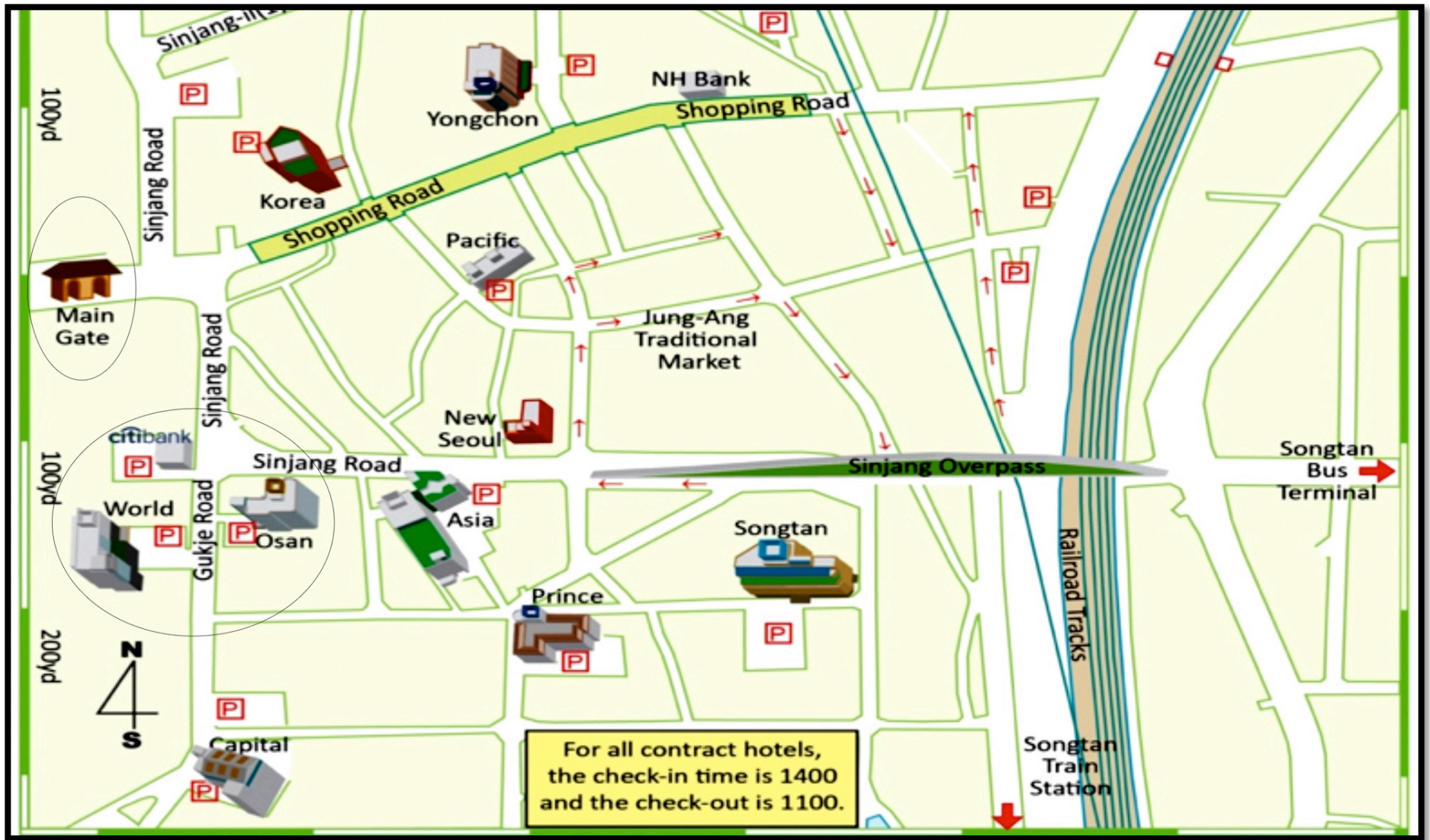
- Information and forms for access to DC-8 aircraft: ***Medical forms, waivers, etc.***
- Deadlines:
  - Visit to Armstrong Flight Research Center (Nov 2-6 in Palmdale, California):
    - **DEADLINE: September 18<sup>th</sup>, 2015.**
  - KORUS-AQ mission (Osan AB):
    - **DEADLINE: January 15<sup>th</sup>, 2016**
- For more information or help contact the Earth Science Project Office (ESPO):
  - Jhony Zavaleta and/or Kent Shiffer

# Osan AB Access

- Korean nationals
- US nationals
- US Foreign nationals
- Non-US Foreign nationals
- Persons from Designated Countries

# Lodging

- Expected mission participants: 120 – 150 people
- Primary lodging venue:
  - Turumi Lodge (~\$60/night)
- Additional & alternate lodging:
  - Osan Hotel, World hotel, other hotels near Osan AB. (~\$82/night)
- *Designated Country Personnel (DCP) cannot stay on base*







# OSAN AIR BASE MAP



# Transportation On the base

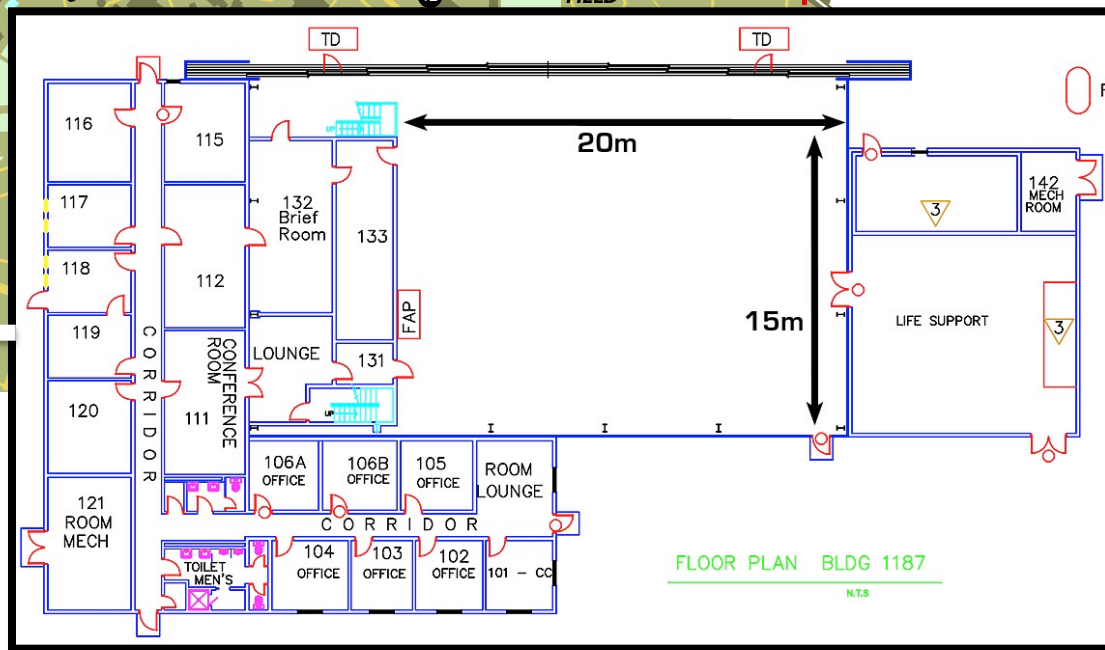
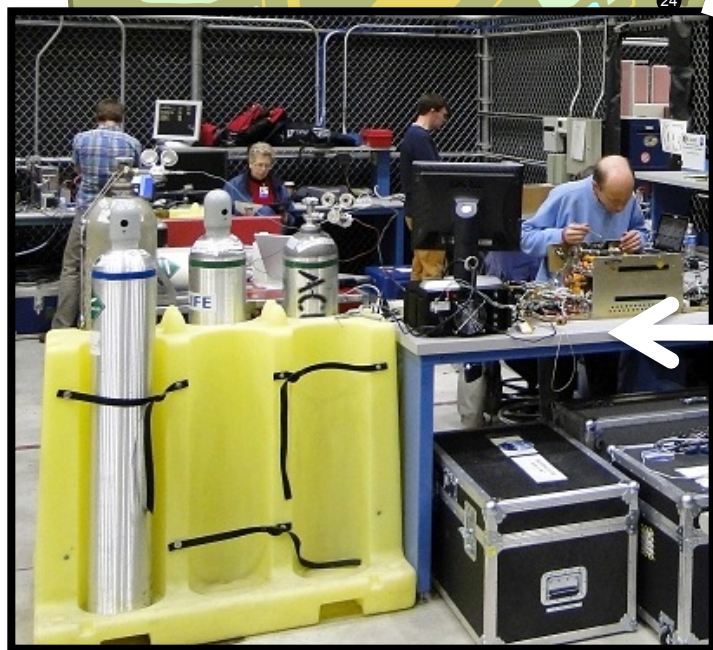
- Vehicles
  - Privately owned vehicles need to be registered
  - Rentals vehicle are allowed
  - Parking spaces near working areas
- Everything is within walking distance
  - 1.5Km from hotel to DC-8 parking spot
- Plenty of taxis available at all hours
  - (~3000 Won)
- Alternative methods are also encouraged:
  - Bicycles

# Work Areas

- Hangar Space (building 1187): Instrument Work
  - Closest proximity to DC-8
  - No air conditioning
  - Power available is 120V/60Hz (on 20A circuits)
    - If needed, higher amperage can be requested.
  - Wi-Fi (100Mbps). Is a static IP needed?
- Aircraft parking
  - DC-8
  - 3 B-200 aircraft



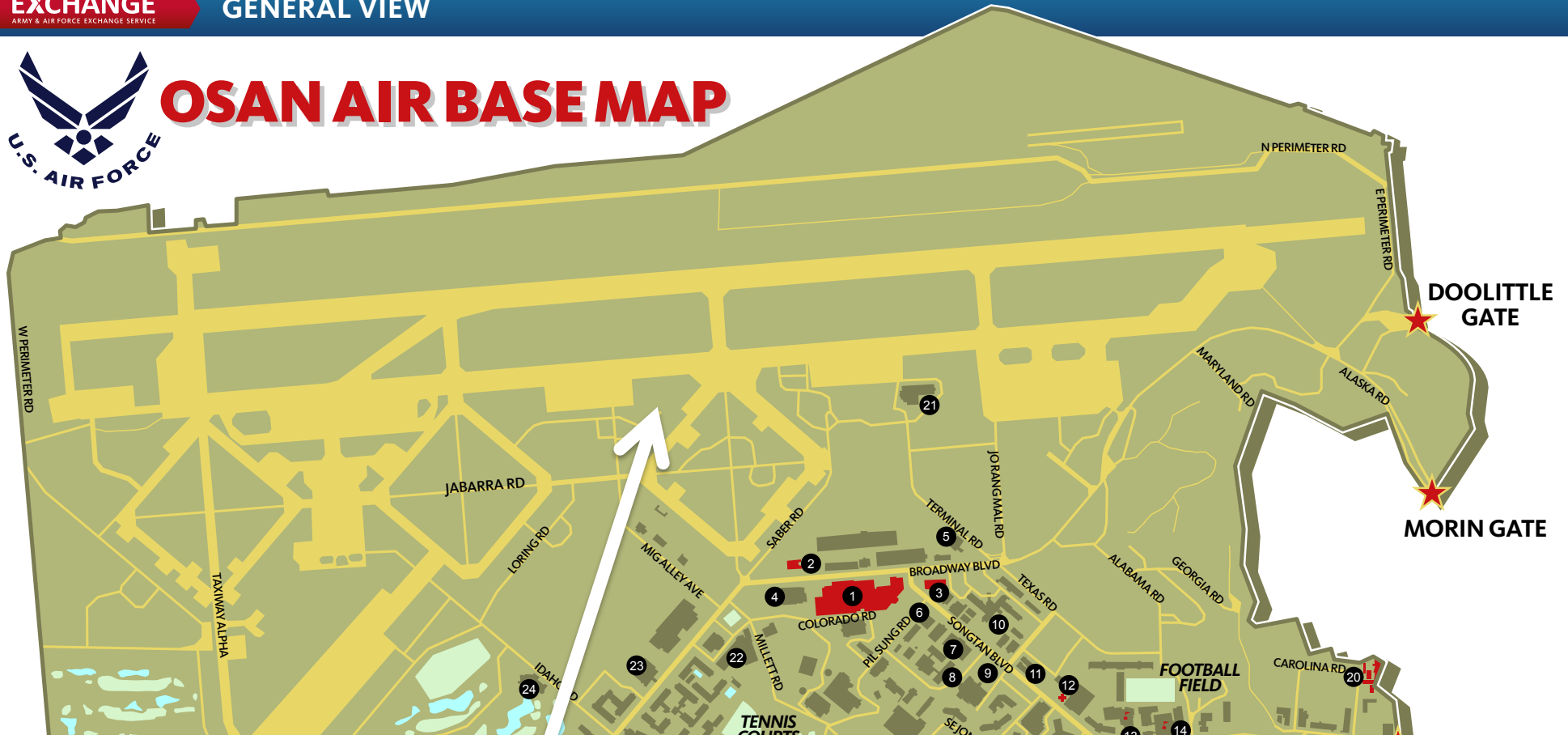
# OSAN AIR BASE MAP







# OSAN AIR BASE MAP

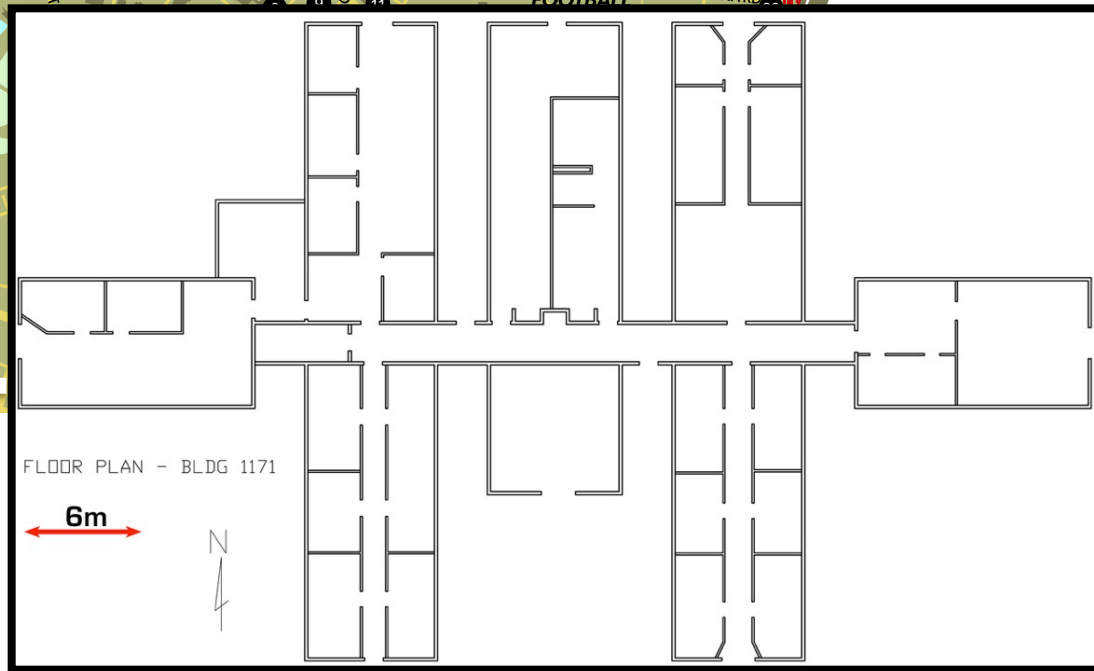
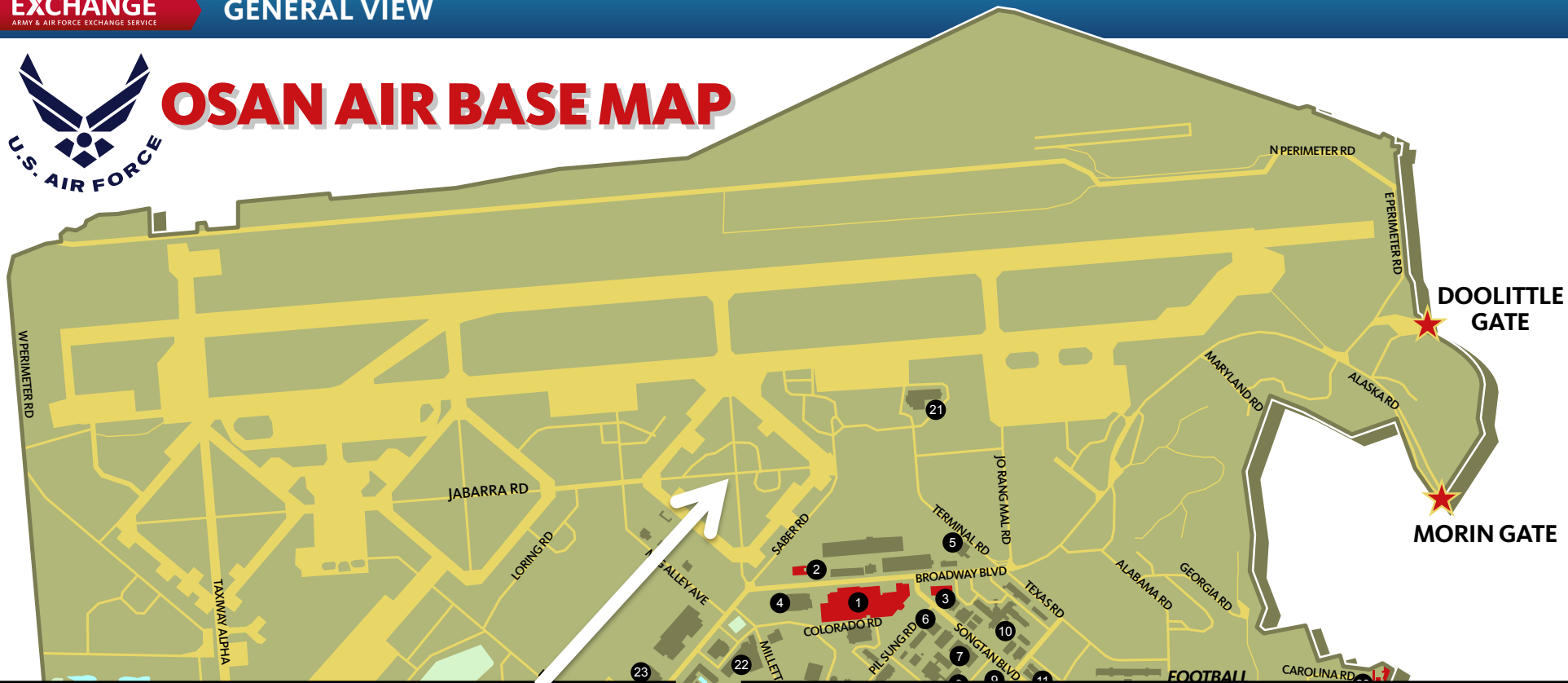


# Work Areas

- Office Space (building 1171)
  - Science team, forecast teams, flight crews, etc.
  - Power available is 120V/60Hz (on 20A circuits)
    - If needed, higher amperage can be requested.
  - Wi-Fi (100Mbps). Is a static IP needed?



# OSAN AIR BASE MAP



# Work Areas

- Aircraft parking
  - DC-8
  - 3 B-200 aircraft
  - Wi-Fi (~100Mbps) might be beamed from hangar via Point-to-Point





# OSAN AIR BASE MAP





# OSAN AIR BASE MAP



Three B-200 aircraft: NIER, KMA, NASA

# Base Restrictions

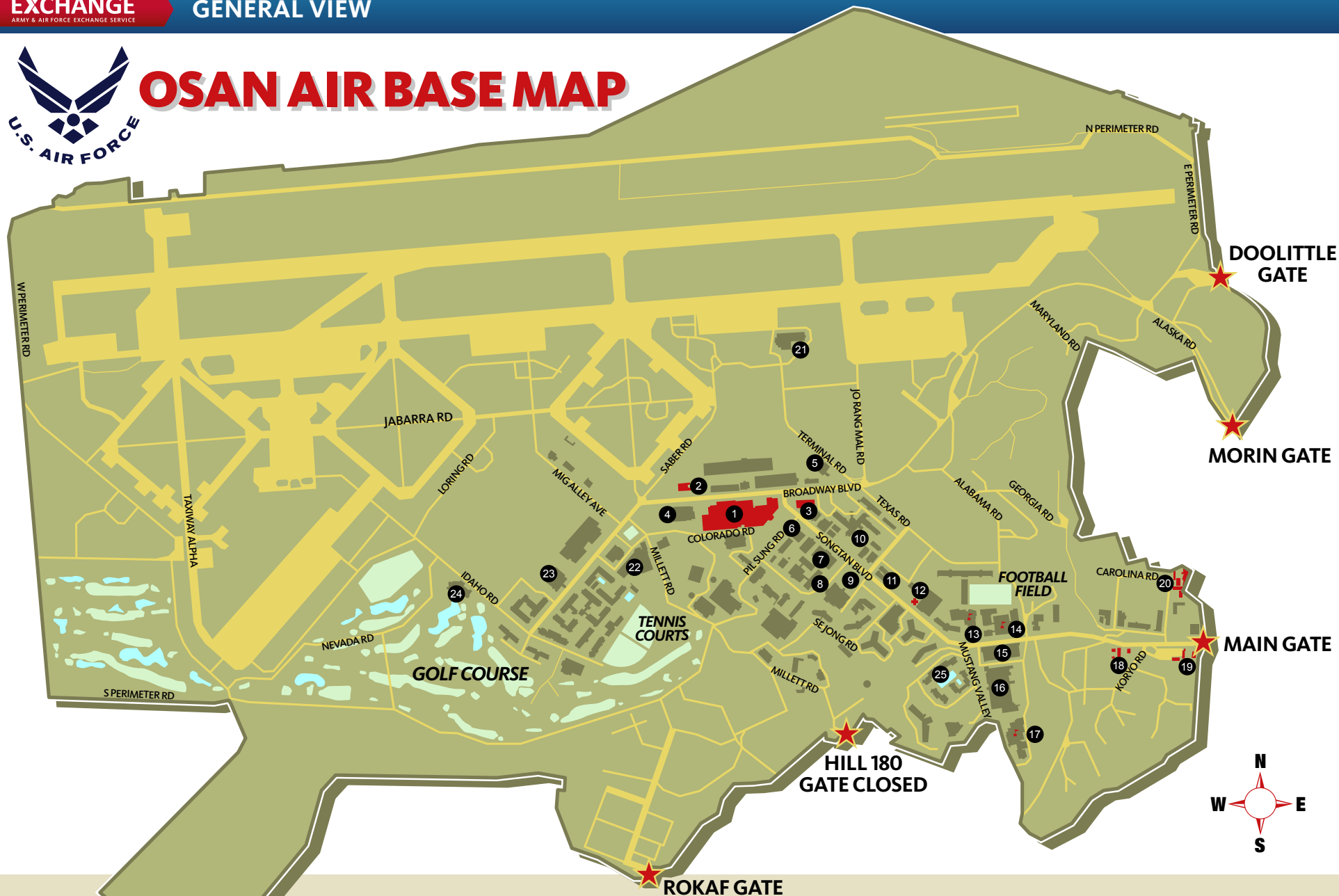
- Base restrictions
  - No Photography in the flight line or towards the runway. No photography of military aircraft.
- DCP escorted at all times from entering the base to exiting the base
- Carry Identification:
  - Mission badge
  - Base ID card
  - Other special access/training as needed.
- Last minute visitors:
  - Must be escorted at all times
  - No after hours
  - Cannot stay on base
  - No DCP
  - Aircraft access needs approval.

# Project Website

- KORUS-AQ
  - <https://espo.nasa.gov/home/korus-aq>
- Sample: SEAC4RS
  - <https://espo.nasa.gov/missions/seac4rs>
- Social Media:
  - <https://www.facebook.com/sciflychannel>
  - Twitter
  - Other



# OSAN AIR BASE MAP



- 1. OSAN EXCHANGE MALL**
  - Osan Main Store
  - Osan Express
  - Osan Military Clothing
  - Osan Food Court
  - Post Office, American Bank
- 2. Popeyes & Burger King**

- 3. Osan Theater**
- 4. Mig Alley Bowling Center**
- 5. BUS Terminal**
- 6. Library**
- 7. Challenger Enlisted Club**
- 8. CPO**
- 9. Officer's Club**

- 10. Turumi Lodge**
- 11. Pass & ID Vehicle Registration Office**
- 12. Hospital**
- 13. Middle School**
- 14. High School**
- 15. Parking Lot**
- 16. Commissary**

- 17. Elementary School**
- 18. Car Care Center**
- 19. American Eatery**
- TAXI**
- Launderette**
- 20. Vending #411 Maintenance**

- 21. AMC Terminal**
- 22. Fitness Center**
- 23. Mustang Enlisted Club**
- 24. Lakes at Osan Golf Course & Club Oriental House**
- 25. Swimming Pools**

# 5 Korean PI Instruments

- What are they?
- Rack engineering
- Inlet engineering
- Collaborator matching
- What specific supports would be necessary?
- Integration: happening in Korea or Palmdale?
- When should the racks with the instrument show up? Need some extra-time for potential trouble shooting?
- Timeline

# Potential Ground Site Augmentation

- Import (ATA-CARNET can be an option... if investigators want a long term observation, NIER can support the import tax exemption just like PANDORA?)
- Power and Space?
- When should the participants be finalized?

Additional Slides



# A typical flight day

(Times vary +/- 3 hours depending on takeoff time and a nominal 8-hour flight for the DC-8, but other aircraft will have similar schedules)

- 0330: Ground crew prepares aircraft for access
- 0400: Teams pre-flight instruments
- 0500: Air crew pre-flights aircraft. Science team & pilots visit weather office for briefing. GO/NO-GO decision.
- 0530: Pre-flight brief for everyone. Top off fuel.
- 0630: Doors close
- 0700: Take off
- 0700 - 1500: Science flight. Ground team monitors flight. Works on data from previous day.
- 1500-1600: Post flight instrument maintenance

# A typical planning/non-flight day

- 0800-1600: Aircraft access for instrument maintenance
- 0900-1000: Forecast/flight planning discussions
- 1000-1500: Flight plan development (scientists & navigators)
- 1600: Final flight plan filed for next flight
- 1600-1730: Science team meeting